

TABLE 1.—*Solar radiation intensities during January, 1931*

[Gram-calories per minute per square centimeter of normal surface]

Washington, D. C.

Date	Sun's zenith distance										
	8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon
	75th mer. time	Air mass									Local mean solar time
A. M.	P. M.									e.	
e.	5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0	5.0	e.	
mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.		
Jan. 2	1.96	0.98	1.10	1.22	1.38	1.27	1.11	0.98	2.06		
Jan. 7	2.16	0.66	0.78	1.16	—	1.09	—	—	2.16		
Jan. 9	2.26	—	0.63	0.78	0.98	—	0.90	—	2.87		
Jan. 13	4.75	—	—	1.20	—	—	—	—	2.62		
Jan. 15	1.24	—	1.10	1.21	1.31	—	1.11	0.98	0.75	1.52	
Jan. 16	1.78	—	0.86	0.98	—	—	—	—	2.06		
Jan. 17	3.45	—	—	1.07	1.28	—	1.08	0.94	0.82	3.45	
Jan. 20	2.87	—	0.89	—	—	—	1.14	0.99	0.81	2.62	
Jan. 22	1.12	—	—	1.06	—	—	—	—	1.52		
Jan. 28	4.95	—	0.84	1.03	—	1.01	—	—	4.17		
Jan. 30	3.30	—	0.97	—	—	—	—	—	2.36		
Means	(0.82)	0.89	1.02	1.15	(1.01)	1.10	1.00	0.84	—		
Departures	+0.09	+0.04	+0.01	-0.08	-0.22	+0.06	+0.12	+0.04	—		

Madison, Wis.

Jan. 3	2.26	0.76	1.00	1.09	—	—	1.14	—	—	3.63
Jan. 9	3.15	0.97	1.07	1.17	—	—	1.30	—	—	2.87
Jan. 16	2.87	0.76	0.90	1.06	—	—	1.10	—	—	3.45
Jan. 22	1.78	—	—	—	—	—	0.96	—	—	1.78
Jan. 26	2.36	0.94	1.11	1.17	1.40	—	1.12	—	—	2.87
Means	—	0.88	1.02	1.12	(1.40)	—	—	—	—	—
Departures	—	-0.07	-0.03	-0.08	+0.04	—	-0.08	—	—	—

Lincoln, Nebr.

Jan. 2	3.45	0.93	0.99	1.12	—	—	—	—	—	3.63
Jan. 4	3.00	—	—	—	—	—	1.21	1.07	0.97	3.63
Jan. 5	2.49	1.05	1.17	—	—	—	—	—	—	3.00
Jan. 14	1.02	1.04	1.08	—	—	—	—	—	—	1.07
Jan. 15	1.88	—	—	—	—	—	1.11	0.98	0.86	3.00
Jan. 16	2.36	—	—	—	—	—	1.02	0.86	0.80	3.81
Jan. 21	2.26	—	1.07	1.17	—	—	1.14	—	—	3.63
Jan. 26	3.30	1.04	1.13	1.21	1.40	—	1.14	—	—	3.63
Jan. 28	3.30	—	—	—	1.36	—	1.14	1.04	0.93	4.57
Jan. 29	3.63	—	0.82	1.15	1.30	—	1.14	—	—	4.37
Jan. 31	3.45	—	1.02	1.20	1.39	—	1.38	1.22	1.11	1.00
Means	—	1.02	1.04	1.17	1.36	(1.38)	1.14	1.01	0.91	3.15
Departures	—	+0.08	-0.01	-0.01	-0.01	—	-0.03	-0.03	-0.03	-0.01

¹ Extrapolated.TABLE 2.—*Total solar radiation (direct + diffuse) received on a horizontal surface*

[Gram calories per square centimeter]

Week beginning—	Average daily totals										
	Washington	Madison	Lincoln	Chicago	New York	Twin Falls	Pittsburgh	Gainesville	Fresno	La Jolla	Miami
1931	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	
Jan. 1	175	105	189	68	113	183	115	276	128	220	262
Jan. 8	168	119	232	98	137	152	93	239	211	237	233
Jan. 15	196	149	202	95	146	220	130	216	227	279	145
Jan. 22	172	162	235	121	138	224	166	296	212	261	223

Departures from weekly normals

Jan. 1	+21	-29	+4	-12	+9	+2	+26	-2	-15	-13
Jan. 8	+14	-25	+40	+15	+34	-40	+1	-4	+45	+10
Jan. 15	+37	-12	+1	-2	+34	+18	+18	-16	+35	+48
Jan. 22	-7	-26	+12	+8	-2	+27	+42	+28	-21	+21
Accumulated departures on Jan. 28	+455	-644	+399	+63	+525	+49	+609	+28	+308	+462

POSITIONS AND AREAS OF SUN SPOTS

[Communicated by Capt. J. F. Hellweg, Superintendent United States Naval Observatory. Data furnished by Naval Observatory, in cooperation with Harvard, Yerkes, Perkins, and Mount Wilson Observatories. The differences of longitude are measured from central meridian, positive west. The north latitudes are plus. Areas are corrected for foreshortening and are expressed in millionths of sun's visible hemisphere. The total area, including spots and groups, is given for each day in the last column.]

Date	Eastern standard civil time	Heliographic			Area		Total area for each day
		Diff. long.	Longi- tude	Latitu- de	Spot	Group	
1931							
Jan. 1 (Naval Observatory)	h 14	°	°	°	No spots	—	—
Jan. 2 (Naval Observatory)	11 18	—	—	—	No spots	—	—
Jan. 3 (Naval Observatory)	11 49	—	—	—	No spots	—	—
Jan. 5 (Mount Wilson)	11 4	-78.0	237.8	-18.0	62	62	62
Jan. 6 (Mount Wilson)	14 0	-65.0	235.8	-19.0	122	122	134
Jan. 7 (Naval Observatory)	13 15	-51.0	249.8	-12.0	129	129	134
Jan. 8 (Naval Observatory)	11 41	-49.0	239.1	-19.0	77	77	77
Jan. 9 (Naval Observatory)	12 3	-9.0	240.2	-18.5	123	123	123
Jan. 10 (Naval Observatory)	11 49	+6.0	242.2	-19.0	62	62	62
Jan. 11 (Naval Observatory)	11 41	+18.0	241.1	-19.0	46	46	46
Jan. 12 (Mount Wilson)	14 10	+4.0	212.5	+8.0	20	20	52
Jan. 13 (Naval Observatory)	12 12	+19.0	215.5	+9.0	62	62	52
Jan. 14 (Naval Observatory)	13 12	+45.0	241.5	+19.5	31	31	93
Jan. 15 (Naval Observatory)	11 43	+40.0	210.4	+8.0	170	170	170
Jan. 16 (Naval Observatory)	14 14	+55.0	210.8	+8.5	463	463	463
Jan. 17 (Naval Observatory)	11 37	+67.5	211.6	+8.5	365	365	365
Jan. 18 (Mount Wilson)	13 25	+22.0	107.9	+5.0	71	71	71
Jan. 19 (Mount Wilson)	14 10	+80.0	209.9	+8.0	337	337	408
Jan. 20 (Naval Observatory)	11 54	-70.0	46.4	+2.0	4	4	88
Jan. 21 (Naval Observatory)	11 42	+20.0	111.4	+5.0	93	93	93
Jan. 22 (Naval Observatory)	13 18	+35.0	112.4	+5.5	154	154	154
Jan. 23 (Naval Observatory)	12 30	+9.0	74.8	+8.0	3	3	3
Jan. 24 (Naval Observatory)	12 43	+48.0	113.6	+3.0	154	154	157
Jan. 26 (Perkins Observatory)	11 19	No spots	—	—	139	139	139
Jan. 27 (Naval Observatory)	11 21	+48.0	47.4	+3.0	31	31	31
Jan. 29 (Naval Observatory)	13 52	No spots	—	—	—	—	—
Jan. 30 (Naval Observatory)	12 13	No spots	—	—	—	—	—
Jan. 31 (Naval Observatory)	11 29	+10.0	329.9	+3.5	9	9	9
Mean daily area for January	—	—	—	—	—	—	109